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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,680	10/20/2001	Werner Haug	FE-15PCT	8233

7590
Friedrich Kueffner
Suite 1921
342 Madison Avenue
New York, NY 10173

03/28/2005



EXAMINER

COSIMANO, EDWARD R

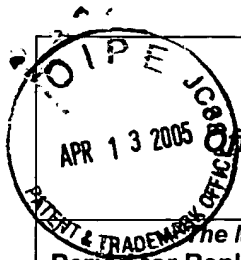
ART UNIT PAPER NUMBER

3639

DATE MAILED: 03/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED
APR 19 2005
OIPE/JCWS



Office Action Summary

Application No.

10/009,680

Applicant(s)

HAUG, WERNER

Examiner

Edward R. Cosimano

Art Unit

3629

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
4a) Of the above claim(s) none is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/20/01.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

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1. Applicant's claim for the benefit of an earlier filing data under 35 U.S.C. § 119 and 35 U.S.C. § 120 is acknowledged.
2. This application does not contain an Abstract of the Disclosure as required by 37 C.F.R. § 1.72(b). An Abstract on a separate sheet is required.
3. The specification and drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification or drawings. Applicant should note the requirements of 37 CFR § 1.52, 37 CFR § 1.74, § 1.75, § 1.84(o,p(5)), § 1.121(a)-1.121(f) & § 1.121(h)-1.121(i).
4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.1 Claims 1-3 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Otani et al (6,106,094) as interpreted by either Giham (EP 0376575 or EP 0376576).

4.1.1 In regard to claims 1-3, Otani et al ('094) discloses a computer control system for printing postal items in which a computer using inputs from various sensors controls a conveyor and printer. To this end an item of mail is conveyed by motor driven feed rollers and a guide past printer portion 200 that uses an inkjet printer to print postage indicia on postal items. As an item of mail is conveyed past printer portion 200 an encoder portion 420 encodes the position of a drive roller so as to control the sequence of printing the postage indicia by using an encoder to sense and encode the speed and position of the item of mail as it passes the printer portion, so that printer portion 200 may properly print each of the individual rows/columns of dots that form the postage indicia. Although Otani et al ('094) indicates that the conveyor portion uses roller, Otani et al ('094) does not disclose the user of a pressure roller after the feed rollers as recited in claim 1. However, as taught by either Giham ('575 or '576) the conveyor portion of Otani et al ('094) would contain at least two conveyor rollers

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that rotate around an axis that is transverse to the direction of travel of the item of mail in order to move the item of mail along a guide path. Further as taught by either Giham ('575 or '576) the printing/conveyor portion of Otani et al ('094) would include a pressure roller located opposite of the printer in order to apply a counter pressure on the item of mail against the printer so as to increase the transfer of ink to the item of mail..

5. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

(c) Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

5.1 Claims 4 & 5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Otani et al (6,106,094) as interpreted by either Giham (EP 0376575 or EP 0376576) as applied to claims 1-3 and further in view of some obvious considerations.

5.1.1 In regard to the structure use in claim 4 & 5 to provide the counter pressure, since it is noted that, items of mail may not be the same thickness, it would have been obvious to one of ordinary skill at the time of the invention that the system of Otani et al ('094) as interpreted by either Giham ('575 or '576) could use any suitable structure that would have some flexibility in applying a constant counter pressure against the printer regardless of the thickness of an item of mail, such as friction rollers, levers and springs, absent applicant's showing of new and unexpected results from a particular structural arrangement.

6. The examiner has cited prior art of interest, for example:

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A) either Schwartz (4,168,533) or Goldberg et al (5,848,401) which discloses a hand-held postage meter that prints postage on preprinted tape.

7. The shorten statutory period of response is set to expire 3 (three) months from the mailing date of this Office action.


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Cosimano whose telephone number is (703) 305-9783 (after 13 April 2005 (571) 272-6802). The examiner can normally be reached Monday through Thursday from 7:30am to 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Weiss, can be reached on (703)-308-2702 (after 13 April 2005 (571) 272-6812). Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-1113.

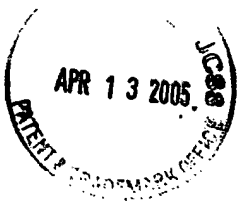
8.1 The fax phone number for UNOFFICIAL/DRAFT FAXES is (703) 746-7240.

8.2 The fax phone number for OFFICIAL FAXES is (703) 872-9306.

8.3 The fax phone number for AFTER FINAL FAXES is (703) 872-9306.

03/20/05


Edward R. Cosimano
Primary Examiner A.U. 3629

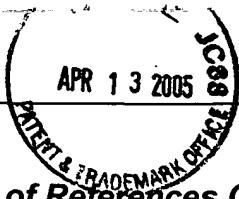


10/009680

JC13 Rec'd PCT/PTO 20 OCT 2001

Sheet 1 of 1

Form PTO-1449										Docket No.: FE-15PCT					Serial No.: not known (PCT/CH01/00116)				
LIST OF PRIOR ART CITED BY APPLICANT										Applicant: Werner Haug									
										Int. Filed: Feb. 22, 2001					Group:				
U.S. PATENT DOCUMENTS																			
Exam. Init.		Document Number							Date	NAME	Class	Subclass	Filing Date if appropriate						
ERC	AA	5	1	6	6	8	8	3	11/92	GILHAM									
	AB	5	9	1	3	6	2	7	6/99	FREEMAN ET AL									
	AC	4	8	2	1	0	4	9	4/89	ECKL									
	AD	5	8	0	6	9	9	4	9/98	COFFY ET AL									
ERC	AE	5	4	4	0	9	7	9	8/95	BONHAM ET AL									
	AF																		
	AG																		
	AH																		
FOREIGN PATENT DOCUMENTS																			
		Document Number							Date	COUNTRY	Class	Subclass	TRANSLATION Yes No						
	AI																		
	AJ																		
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	AL																		
	AM																		
	AN																		
	AO																		
OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)																			
	AP																		
	AQ																		
	AR																		
EXAMINER										DATE CONSIDERED									
Cosimano, E.										3/20/05									

**Notice of References Cited**

Application/Control No.

10/009,680

Applicant(s)/Patent Under

Reexamination

HAUG, WERNER

Examiner

Edward R. Cosimano

3/20/05

Art Unit

3629

Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-4,168,533	09-1979	Schwartz, Leon J.	705/403
	B	US-5,848,401	12-1998	Goldberg et al.	705/408
	C	US-6,106,094	08-2000	Otani et al.	347/19
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N	EP 0376575 A2	07-1990	EPO	Gilham	
	O	EP 0376576 A2	07-1990	EPO	Gilham	
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

12

EUROPEAN PATENT APPLICATION

21 Application number: 89313224.1

51 Int. Cl.⁵: **G07B 17/00**

22 Date of filing: 18.12.89

30 Priority: 30.12.88 GB 8830422

Romford Essex, RM1 2AR(GB)

43 Date of publication of application:
04.07.90 Bulletin 90/27

72 Inventor: **Gilham, Dennis Thomas**
12 Larkin Close
Brentwood Essex CM13 2SL(GB)

84 Designated Contracting States:
CH DE FR GB LI

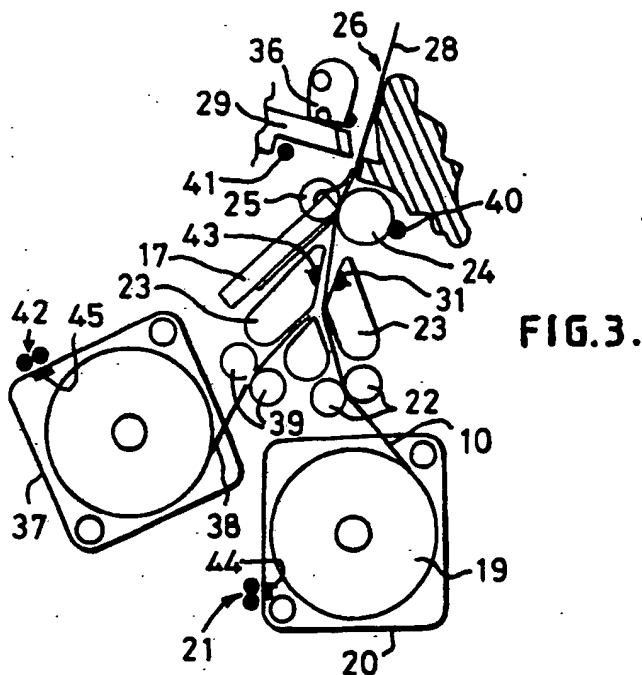
71 Applicant: **ALCATEL BUSINESS SYSTEMS**
LIMITED
P.O. Box 3 South Street

74 Representative: **Loughrey, Richard Vivian**
Patrick et al
HUGHES CLARK & CO 63 Lincoln's Inn Fields
London WC2A 3JU(GB)

54 **Postage stamp and dispensing system therefor.**

57 A postage stamp dispenser receives a cassette (20) of postage tape (10) which has marks (11) along its length representing postage value. When a stamp (28) is to be dispensed, the dispenser feeds a length of tape (10) corresponding to the required postage value and prints information such as the postage

value (33) and date (34) on the tape (10). The dispenser may mark the tape with a fluorescent stripe (35) to assist cancellation equipment to locate the stamp. The tape is provided in lengths of known value and the dispenser may provide an indication of the value of tape remaining unused in the cassette.



EP 0 376 575 A2

This invention relates to machines for issuing postage stamps and in particular to machines in which stamps of any selected value can be issued.

In order to overcome disadvantages of purchasing postage stamps from a postal authority for use in mailing items, franking machines which print a postal frank indicating payment of a postage charge on the item are used by business users of the mailing system. However due to the need for security in the construction and operation of such franking machines, the machines tend to be relatively expensive and accordingly are not used by small business users. Consequently small business users are constrained to purchase and use stamps issued by the postal authority. As a result, it is necessary for a user to keep a stock of a number of different values of stamps in order to ensure that the correct value of stamps are available for application to items of various different weights. Also when the postal rates change, values which were commonly used are little used and can only be used, if the postal rates have increased, in conjunction with additional stamps. Postal stamps are difficult to keep safely and recording the use of such stamps has to be carried out manually.

According to one aspect of the invention a stamp dispensing system including dispensing apparatus; postage tape receivable by said dispensing apparatus; said tape having a physical characteristic corresponding to postage value; said dispensing apparatus including means to feed said postage tape and issue a portion of said tape constituting a postage stamp from said dispensing apparatus and control means operable to control the feeding means to issue a stamp of selected value, the physical characteristic of that portion of tape issued as a stamp being indicative of the postage value of the stamp.

Preferably the dispensing apparatus includes printing means to print at least a representation of the postage value on the tape.

According to other aspects the invention embraces dispensing apparatus for use in the stamp dispensing system defined hereinbefore and embraces a postage tape and a cassette of postage tape for use in stamp dispensing apparatus as defined hereinbefore.

A postage stamp and a dispenser therefor comprising a postage stamp dispensing system in accordance with the invention will now be described by way of example with reference to the drawings in which:-

Figure 1a shows a length of postage tape prior to printing,

Figure 1b shows a printed postage stamp,

Figure 2 is a block diagram of the electronic circuitry of a dispenser,

Figure 3 illustrates the mechanical arrange-

ment of the dispenser during printing of a postage stamp and

Figure 4 is similar to Figure 3 after printing is complete and illustrates operation of a guillotine to sever the printed stamp.

A preferred form of postage stamp dispensing system comprises a cassette containing postage tape and a dispenser machine to receive the cassette and operable to print postage stamp information on the postage tape and then dispense the printed portion of tape. The cassette houses a length of postage tape which is thermally sensitive to permit printing thereon by a thermal print head. The cassettes may house a single standard predetermined length of postage tape corresponding to a single total value of postage but it is preferred to provide cassettes with selected different lengths of postage tape and to provide the cassette with means identifying the length of postage tape and hence the total postage value of the tape housed therein. The postage tape may be self adhesive or have a coating of moistenable gum on its reverse face. As shown in Figure 1a, the postage tape 10 is pre-faced with a track of marks 11 extending along the length of the tape to represent postage value. The marks extend along the centre of the tape as shown but if desired may extend adjacent an edge of the tape 10. Instead of a track of marks, the tape may have some other physical characteristic which represents postage value.

The dispenser machine to dispense postage stamps from the postage tape in the cassette is of simple construction and as shown the block electronic circuit diagram of Figure 2 includes a micro-processor 12 to control operation of the dispenser and is provided with a keyboard 13 for input of postage charge values and control signals by a user and a display 14 such as a liquid crystal device to display the value entered on the keyboard and if desired dispenser status and user prompt information to the user. The dispenser includes memories 15, 16 of which at least memory 15 is non-volatile and is utilised to store information relating to usage of the dispenser including monetary value of postage tape remaining in the cassette. A thermal print head 17 is provided to print on the postage tape under the control of print signals from the micro-processor 12. The information to be printed may include both fixed and variable data. Fixed information would include the Postal Authority logo authorised for use on such postage tape and the variable information would include value of the postage stamp, the date and information which may be entered by means of the keyboard relating to post codes and special services. The dispenser includes a clock 18 maintained by a battery which inputs date information to the micro-processor for output to the printer to print

the current date on the stamp being issued. The program routines for operation of the micro-processor are stored in a non-volatile or read only memory 15 or 16. Fixed data to be printed may also be stored in this memory.

Figures 3 and 4 illustrate the mechanical arrangement of the components of a postage stamp dispensing system. A reel 19 of postage tape 10 is housed in a cassette 20. The dispenser includes means 21 to sense that a cassette 20 containing postage tape is positioned in the dispenser and, if cassettes containing different lengths of postage tape are to be accommodated, the dispenser includes means 21 operative to sense an indication 44 on the cassette which relates to the length of postage tape housed in the cassette. The indication on the cassette may consist of a marking on the cassette body or may be provided by a physical characteristic of the body, for example one or more apertures in a wall of the body of the cassette. A pair of feed rollers 22 feed the tape 10 from the cassette between guides 23 to the print head 17. An impression roller 24 urges the tape 10 into engagement with the print head and together with feed rollers 25 located on each side of the print head feeds the tape past the print head to an exit 26 from the dispenser. A motor drive 28 comprising an electric motor, which may be a D.C. motor or a stepper motor, operated under the control of the microprocessor 12 drives the impression roller 24 and also drives the pair of feed rollers 22 by means of a first clutch selectively operated under the control of the microprocessor to feed the postage tape 10 from the cassette past the print head 17 and to the exit 26 so as to issue a stamp 28 (see Figure 1b) carrying the marks 11 and printed by the print head from the dispenser. A guillotine 29 is provided to sever the issued stamp 28 from the remainder of the postage tape 10. The guillotine may be manually operated by a user when prompted by a prompt sign shown by the display or may be operated automatically by the micro-processor when issue of the printed stamp is completed. Preferably an interlock is provided to prevent operation of the guillotine until issue of the stamp is complete. After issue of the stamp 28 the impression roller 24 is moved away from the print head 17 and feed rollers 25 by a motor drive 30 controlled by the microprocessor and the motor drive 27 is energised in reverse to withdraw the postage tape 10 and draw back the free end of the tape so that the free end lies between the guides 23. The tape is then ready for feeding to the print head for printing the next stamp. The energisation of the motor drive 27 is controlled by sensing of the marks 11 on the tape 10 by a sensor 31. This sensing of the marks is utilised to control start of printing of data on the postage stamp by the print

head, the length of tape fed past the print head to the exit 26 and to control operation of the guillotine 29. In addition, after printing of a stamp and issue thereof, when the tape is withdrawn from the print head the sensor detects the passing of the free end of the tape to terminate the reverse energisation of the motor drive 27.

In use of the dispenser, a cassette containing postage tape is inserted in the dispenser and the presence of the cassette and the monetary value indicated by the means on the cassette of the length of postage tape within the cassette is sensed by the sensing means of the dispenser. The monetary value of the tape is written to the non-volatile memory 15. The user enters a required value of postage by means of the keyboard 13 and if required a control key to initiate a stamp printing operation. The motor drive 27 is energised under control of the micro-processor 12 to feed a length of tape 10 corresponding to the postage charge past the print head 17 to enable printing on the tape of the Post Office logo 32, the value of postage charge 33 and the date 34 as is shown in Figure 1b. Each mark represents one unit of postage charge, for example one penny, and hence in order to issue a stamp of say 19 pence value the motor drive 27 is energised so that the postage tape fed past the print head has a length with 19 marks spaced along the track. The marks may be in the form of circular dots or may be rectangular areas. The pitch of the marks may be approximately 1 mm. Thus the portion of the tape issued as a stamp 30 is of a length corresponding to the value printed and bears a printed visual indication of the postal value and, in addition bears, along a track, a representation of the value which can be easily read by reading equipment in the Post Office. After printing of the stamp 29 is complete, the energisation of the motor drive 27 is continued for a sufficient time to feed the stamp 30 out from the dispenser. The guillotine 29 is operated to detach the stamp from the remaining tape and the motor drive 28 is energised to drive the tape in reverse to rewind the tape and draw the free end of the tape back. Sensors 40 and 41 are provided to detect the states of the impression roller and the guillotine respectively.

The micro-processor decrements the value of the tape sensed from the cassette by an amount equal to the value of the postage stamp printed by the thermal print head for each issue of a stamp. By operation of an appropriate control key, the user may ascertain the value of tape remaining in the cassette at any time. The dispenser may include a register in the memory designated to store a value equal to the total value of postage stamps issued by the dispenser.

It will be appreciated that prior to carrying out a

stamp printing operation to print a stamp of value indicated by an input by means of the keyboard, the micro-processor reads the contents of the memory 15 to ascertain that there is a sufficient monetary value and length of tape to effect printing of the stamp. If the length of tape remaining in the cassette is insufficient for the desired value of stamp, printing is inhibited and a prompt to the user is displayed by the display. An over-ride facility may be provided to enable the end of the tape to be issued followed by an issue from a replacement new cassette for the remainder of the value of the required postage amount.

In addition to the postage tape cassette, the dispenser may be constructed to receive a second cassette 37 housing a strip of paper 38 which can be fed past the print head 17, at times when the dispenser is not being used to dispense postage stamps, to print data relating to usage of the dispenser and other pre-defined information, for example 'first class mail' and 'airmail' as required by the user. A second pair of feed rollers 39 is provided to feed the paper strip from the cassette 37 between the guides 23 to the print head 17 and impression roller 24. The pair of feed rollers 39 are driven by the motor drive 27 by means of a second clutch selectively actuable by the microprocessor. Thus when it is desired to print on the paper strip 38 the motor drive 27 is operated as described hereinbefore in respect of printing and issuing a stamp but the second clutch of the motor drive is actuated instead of the first clutch. After the required printing has been effected and the printed portion has been severed from the remainder of the strip by operation of the guillotine, the paper strip is withdrawn by reverse drive of the pair of feed rollers 39. The dispenser is provided with a further sensor 42 to detect the presence of the second cassette and a sensor 43 to detect position of the paper strip. Generally, if the second cassette houses a paper tape only for the purpose of providing a printout of data, the sensor is not required to sense the length of paper tape in the cassette. However it may be convenient to permit a postage tape cassette to be received in either location of the dispenser. Accordingly if this is required, the sensor 42 is the same as the sensor 21 and senses both the presence of the cassette and the indication 45 of length of postage in the cassette. If postage tape cassettes are receivable in either location of the dispenser, the sensors 21 and 42, or some other means, provide an indication to the microprocessor of which location is being used currently for dispensing postage tape.

While data to be input to the dispenser may be entered by means of the keyboard, the dispenser may be provided with a reading head to enable data such as postal rates to be input from a card or

the like carrying such data in dispenser readable form.

It will be appreciated that the marks 11 on the postage tape are provided in a secure manner in order to prevent or deter production of unauthorised forgeries of the postage tape. The marks may be formed as magnetic, optical or holographic recordings on a stripe of suitable material on the postage tape. In order to prevent re-use of the stamps issued by the dispenser, the Post Office would pass mail items bearing the stamps through a device to effect cancellation of the stamps. One form of secure holographic recording and erasure thereof is described in Eureka, September 1983 pages 37, 38. To assist cancellation equipment of the Post Office to locate the stamp on the mail items, the tape may be marked, for example, with a fluorescent stripe 35 by inking means 36. The inking means 36 is preferably mechanically coupled with the guillotine 29 so that upon operation of the guillotine to sever the stamp, the inking means engages the stamp adjacent the trailing end thereof thereby ensuring that the stripe is located at a predetermined position relative to the end of the stamp.

Thus it will be understood that the stamp dispensing system enables a user to purchase a cassette of tape of selected monetary value and to dispense stamps of any desired value from the cassette until there is no or insufficient tape remaining in the cassette. In addition the dispenser maintains a record of usage of the dispenser and the user can operate the dispenser to issue a printed record of use of the dispenser.

While a postage stamp dispensing system using a postage tape housed in a cassette has been described hereinbefore it will be appreciated that although it is convenient and it is preferred to provide the tape in a cassette it is not necessary that the tape should be in a cassette. The postage tape could be supplied as an open reel which is inserted in a receptacle in the dispenser. In this case, the postage value of the tape would be entered by the user by means of the keyboard or could be recorded on a leader or packaging of the tape in a form readable by a reader included in the dispenser.

It is considered to be desirable to provide a control in respect of the minimum and maximum values of postage stamp which can be issued by the dispenser. Stamps of very small value would be of such short length that they would be difficult to handle and stamps of very high value may well be of such a long length as to be difficult or impossible to accommodate upon a mail item. Accordingly the microprocessor would be programmed to check, prior to printing and issue of a postage stamp, that the value entered by the user

by means of the keyboard of stamp required lies within predetermined upper and lower limits.

The marks 11 need not be visible on the face of the stamp and, provided that they are readable by the Postal Authority equipment, the marks may be provided within the thickness of the tape or on the reverse face of the tape.

Claims

1. A stamp dispensing system characterised by the provision of dispensing apparatus; and a postage tape (10) receivable by said dispensing apparatus; said tape having a physical characteristic (11) corresponding to postage value; said dispensing apparatus including feeding means (24, 25, 27) to feed said postage tape and issue a portion of said tape constituting a postage stamp (28) from said dispensing apparatus and control means (12, 31) operable to control the feeding means to issue a stamp of selected value, the physical characteristic of that portion of tape issued as a stamp being indicative of the postage value of the stamp.

2. A stamp dispensing system as claimed in claim 1 further characterised in that the dispensing apparatus includes a memory (15) to store a value representing the postal value of tape (10) remaining in the dispensing apparatus.

3. A stamp dispensing system as claimed in claim 2 further characterised by means (12) responsive to issuing of a stamp to decrement the value stored in memory (15) by an amount equal to the value of the printed stamp (28).

4. A stamp dispensing system as claimed in any preceding claim further characterised in that the postage tape (10) is housed in a cassette (20) receivable in the dispensing apparatus.

5. A stamp dispensing system as claimed in claim 4 further characterised in that the cassette (20) carries an indication (44) of the postage value of tape (10) housed therein and the dispensing apparatus includes means (21) to sense said indication.

6. A stamp dispensing system as claimed in any preceding claim further characterised in that the physical characteristic (11) of the postage tape (10) comprises a track of marks (11) at substantially equi-spaced intervals along the length of the tape, the number of marks corresponding to the postage value.

7. A stamp dispensing system as claimed in any preceding claim further characterised in that the dispensing apparatus includes printing means (17) operative to print on that portion of the tape (10) to be issued as a postage stamp (28) at least a representation of the value of the postage stamp.

8. A stamp dispensing system as claimed in

claim 7 further characterised in that the printing means (17) is controlled to print the value of the stamp in human readable form (33).

9. A stamp dispensing system as claimed in claim 7 or 8 further characterised in that the dispensing apparatus includes a clock (18) providing date data (34) and in which the printing means (17) is controlled to print date data (34) on the stamp (28).

10. A stamp dispensing system as claimed in claim 7, 8 or 9 further characterised in that the printing means (17) is operable to print a record of usage of the dispensing apparatus.

11. A stamp dispensing system as claimed in claim 7, 8, 9, or 10 further characterised by the provision of a further tape (38) receivable by the dispensing apparatus and in which the further tape (38) is selectively feedable past the printing means (17).

12. A postage tape characterised in that it comprises a length of tape (10) having a physical characteristic (11) corresponding to a postal value of said tape.

13. A postage tape as claimed in claim 12 further characterised in that the physical characteristic (11) comprises a track of marks (11) indicative of postage value.

14. A postage tape as claimed in claim 12 or 13 further characterised in that the physical characteristic (11) is recorded on the tape (10) magnetically or optically.

15. A postage tape as claimed in claim 12, 13 or 14 further characterised in that the physical characteristic (10) is recorded in a secure manner on the tape (10).

16. A postage stamp characterised in that it is severed from a postage tape (10) as claimed in any one of claims 12, 13, 14, or 15.

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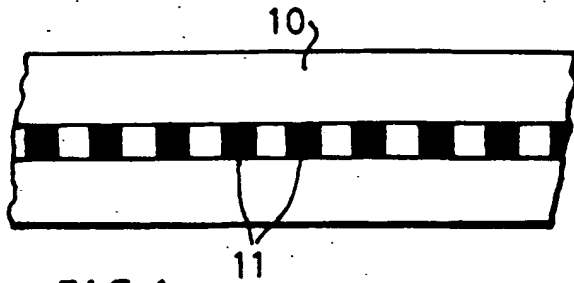


FIG. 1a.

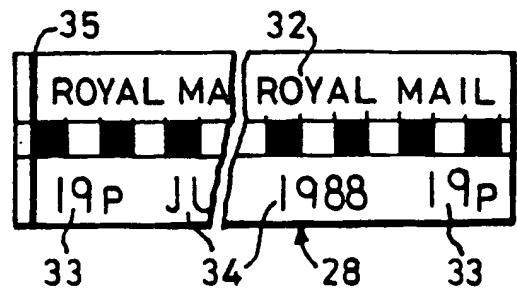


FIG. 1b.

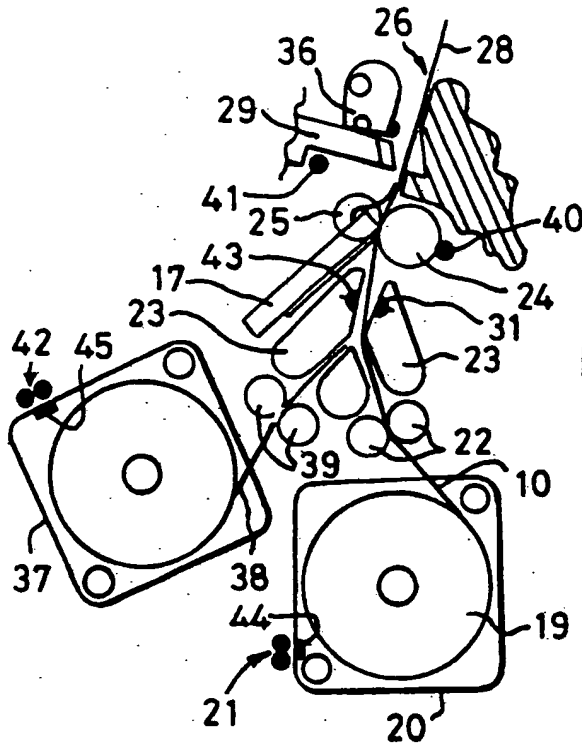


FIG. 3.

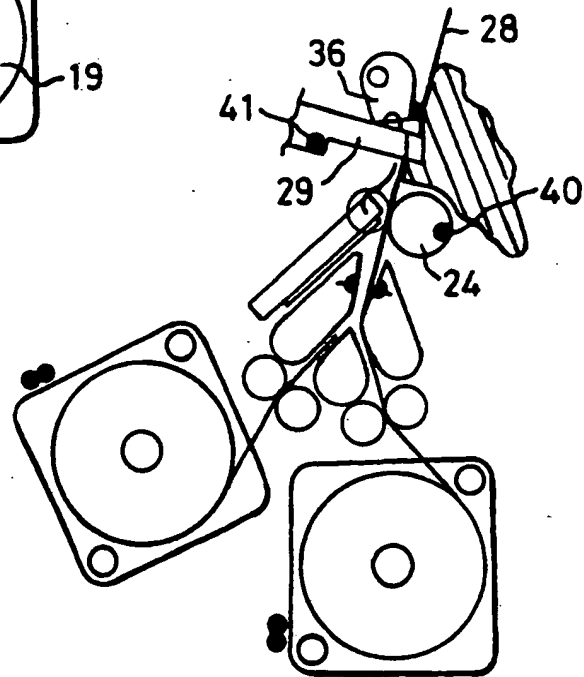


FIG. 4.

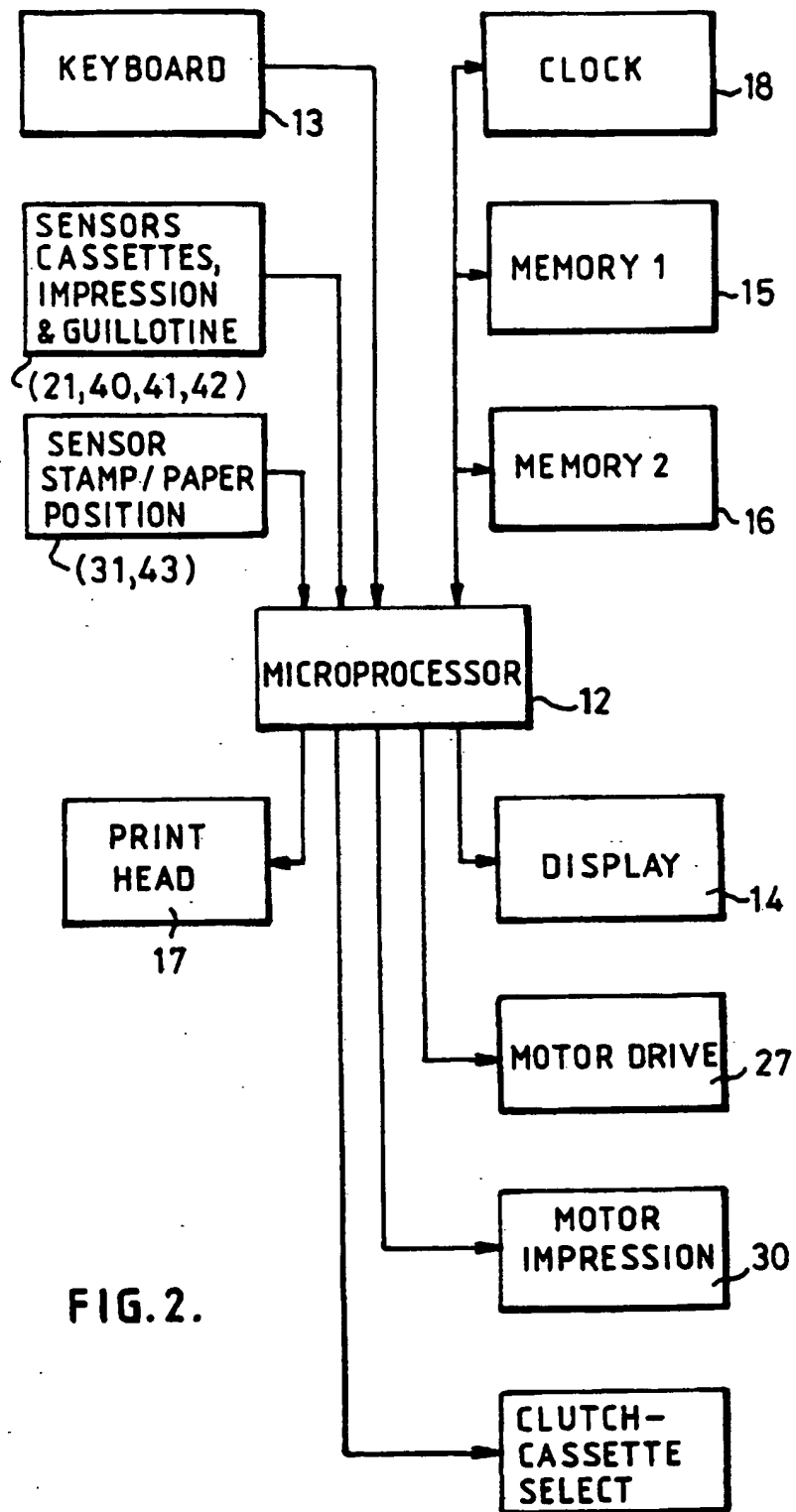


FIG. 2.

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Romford Essex, RM1 2AR(GB)

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⑦② Inventor: Gilham, Dennis Thomas
12 Larkin Close
Brentwood Essex CM13 2SL(GB)

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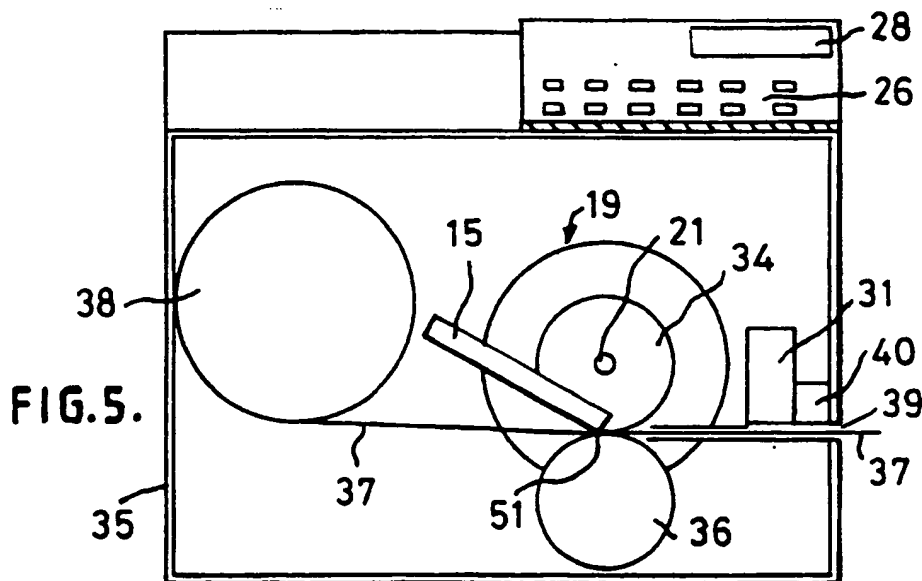
⑦① Applicant: **ALCATEL BUSINESS SYSTEMS LIMITED**
P.O. Box 3 South Street

⑦④ Representative: Loughrey, Richard Vivian
Patrick et al
HUGHES CLARK & CO 63 Lincoln's Inn Fields
London WC2A 3JU(GB)

⑤④ Postage stamp machine.

⑤⑦ A machine for printing a postage stamp (45) for application to a mail item includes a thermal printer (15) to print the stamp on a tape (37) of thermally sensitive paper. The speed of feeding of the tape is controlled to be uniform to synchronise with the operation of the printer. The printer (15) is non-secure and accounting for the value of postage charge printed on the stamps is accomplished by

machine reading of the stamps by the Postal Authority. The stamp printing machine generates an accumulated value of postage charge for a series of stamps printed and then prints, on the same tape, a label (46) including an indication of user account and accumulated value, the value preferably being in encoded form.



POSTAGE STAMP MACHINE

This invention relates to machines for applying a printed stamp to postal items.

When items are to be carried by a postal authority for delivery to a destination address, payment for carriage of the item is made to the postal authority by purchase of one or more postage stamps which are then affixed to the postal item. The stamps affixed to the postal item provide an indication during subsequent handling of the postal item by the postal authority that a postage charge has been paid and the amount or value of the postage charge paid.

The purchase and affixing of postage stamps is inconvenient particularly for regular senders of postal items requiring variable postage such as small commercial users of the postal service. In order to overcome the need for purchase of postage stamps prior to despatch of postal items, franking machines were introduced. Franking machines are operated by persons or companies desiring to despatch postal items and are operated under licence from the postal authority. The franking machine is caused to print on the postal item a frank impression of a form prescribed by the postal authority which includes an impression of the value of postage franked on the item. In order for the user of the franking machine to be able to account to the postal authority for the value of postage used to the satisfaction of the postal authority, it has been necessary to provide the franking machine with accounting means to maintain an accurate record of the usage of the machine and the accumulated value of franking applied by the machine. Commonly, the postal authority requires prepayment for usage of the machine. Accordingly the machine includes a register to record the value of credit, purchased by the user from the postal authority, which remains available for usage in franking. The machine is constructed such that, when the registered value of credit decreases to a predetermined low limit, the machine locks and prevents further usage of the machine until additional credit has been entered in the register of the machine by the postal authority in response to payment by the user.

Modern franking machines utilise electronic circuits for carrying out accounting and control functions within the machine. These circuits include a micro-processor and memory devices providing registers for registering accounting values. The registers usually include a descending register into which the value of purchased credit is entered and which is decremented during usage of the machine by the value of franking used in each franking transaction. The registers also include an ascend-

ing register to register the accumulated value of franking used and an items register for registering the number of mail items franked by the machine. In order to maintain integrity of the values registered in the various registers, each of the registers is replicated, each replication storing corresponding values. Thus if due to a fault in the operation of the electronic circuits the value registered in one of the replications of a register differs from the value registered in the other replications of that register an indication is provided that a fault has occurred and the true accounting value can be retrieved from the other replications of that register.

If the electronic accounting circuits and the value setting mechanisms by which print elements for printing the value of franking are unprotected, the values registered in the registers and/or the values of postage printed in the franking could be changed by anyone with fraudulent intent. Accordingly it has been necessary to house the circuitry and printing mechanism in a secure manner such as to prevent unauthorised access to these parts of the machine.

The provision of replicated registers and particularly the provision of a secure housing for the circuits and print setting mechanism adds greatly to the cost of manufacturing franking machines. As a result franking machines are too expensive for purchase by users who despatch relatively small quantities of postal items and therefore users who despatch relatively small quantities of postal items are compelled to use postage stamps which may be inconvenient, time consuming and in addition are somewhat un-hygienic to use.

According to one aspect of the invention a postage stamp printing machine comprises electronic control means; means to store data relating to fixed information to be printed; means to input selected variable postage rate data to the control means; printing means operable by said control means to effect a printing routine in which the fixed information and the selected variable postage rate information is printed; feed means to feed a mail item past the printing means to cause printing of a postage stamp on the mail item; means to control the speed at which said mail item is fed to a substantially constant speed.

It is preferred to print the stamp on a paper tape and accordingly the postage stamp printing machine may include severing means operable to sever a printed stamp from the paper tape.

The printing means conveniently includes a thermal print head comprising a line of selectively energisable printing elements which are heated by energisation thereof to print upon a tape of ther-

mally sensitive paper.

The machine may include means to print a stripe of fluorescent or phosphorescent ink on the mail item.

The machine may be controlled by a program routine to print at least one mark identifying selected data printed on the stamp.

The machine may also be controlled by a program routine to print a statement label carrying data relating to a preceding printing of one or more postage stamps.

According to another aspect of the invention a method of printing postage stamps and accounting for value of stamps printed includes the steps of utilising a non-secure printer to print a series of postage stamps, each printed postage stamp including an indication of postage charge for the respective postage stamp; and utilising reading means to read each of the series of postage stamps and to generate an accumulated total postal charge for the series of postage stamps.

The statement label may be printed on the same paper tape as that on which the postage stamps are printed.

An embodiment of the invention will now be described with reference by way of example to the drawings in which:-

Figure 1 is a block circuit diagram of the electronic components and interconnections of a stamp printer in accordance with the invention,

Figures 2(a) and 2(b) are axial and transverse views of a sensor for sensing paper speed,

Figure 3 is a flow chart of a print routine of the stamp printer and

Figure 4 (a) illustrates the format of a pre-printed paper tape,

Figure 4 (b) illustrates the format of a stamp printed on the paper tape of Figure 4 (a) by the stamp printer,

Figure 4 (c) illustrates the format of a stamp printed on a plain paper tape,

Figure 5 shows diagrammatically the mechanical arrangement of components forming the stamp printer, and

Figure 6 illustrates a sequence of stamps and a label printed on the tape and severed therefrom.

Referring first to Figure 1, the stamp printer comprises a micro-processor 10, a read only memory 11, a random access memory 12 and an input/output device 13 interconnected by a system bus 14. If desired the micro-processor, memories and input/output device may be implemented in a single integrated circuit chip. A thermal print head 15 comprising a line of print elements which are selectively energisable to heat selected print elements is connected to the input/output device 13. A tape of heat sensitive paper is fed past the print

head, in a direction transverse to the line of print elements, by means of a feed roller and co-operating pressure roller, the pressure roller being effective to maintain the tape in contact with the elements of the print head as the tape passes the print elements. The feed roller is driven by a motor 16 energised by a motor drive circuit 17. The motor drive circuit is controlled by an output on line 18 from the micro-processor 10. Printing data for printing a stamp on the tape is sent to the print head serially and is clocked by clock signals on a clock line of the system bus 14. Feeding of the paper tape is maintained at a substantially constant speed so that printing is effected in synchronism with movement of the paper tape. The speed of feeding the paper tape is sensed by a sensor 19 driven with the feed roller 34 which, as shown in Figure 2, may consist of a disc 20 on the feed roller shaft 21 provided with a track 22 of alternate transparent and opaque regions and a photo transistor 23 responsive to light transmitted through the transparent regions from a source of light 24, such as a light emitting diode. Signals from the photo transistor 23 consisting of a train of pulses whose repetition rate is proportional to the speed of rotation of the feed roller are input to the micro-processor 10 on line 25. The micro-processor utilises these signals to control the motor drive circuit 17 such as to maintain the speed of rotation of the feed roller substantially constant. The speed of the motor is controlled by the magnitude of power input to the motor. The motor may be driven by a train of pulses from the drive circuit and the power input to the motor may be varied by varying the width of pulses at constant frequency or by varying the frequency of the constant width pulses. Alternatively, a digital output from the micro-processor representing the magnitude of power input to the motor may be converted, by a digital to analogue converter, to an analogue signal which is input to a power operational amplifier to produce a variable voltage output drive to the motor, the voltage magnitude being such as to provide the desired magnitude of power to the motor.

Operation of the stamp machine is controlled by a user by means of inputs on a keyboard 26 which is connected by interface circuit 27 to the micro-processor 10. Some of the keys of the keyboard may be designated to provide function signals to the micro-processor such as a start signal to initiate operation of a print routine. Other keys are designated to provide numerical data input to the micro-processor to enable a user to input the postage value of the next stamp to be printed. A display device 28 is provided to display data to a user, such data for example including an echo of the input on the keyboard to enable a user to verify that the required input has been made. In addition

to inputs on the keyboard 26, the micro-processor may also be connected to receive inputs from external peripheral devices such as a weighscale.

The keyboard and display would usually be constructed as dedicated devices integral with the stamp machine. However, if desired, the keyboard and display device may be implemented by utilisation of a commercially available electronic calculator as indicated by the dotted line 29. Such a calculator includes electronic circuits 44 for scanning the state of the keys of the keyboard and for displaying the keyboard input on the display device. Also the electronic circuits are arranged to carry out arithmetical functions and include a memory for retaining the results of an arithmetical operation. The calculator includes scan lines 45 connected to the keyboard whereby the electronic circuit 44 of the calculator senses which one if any of the keys have been operated. The interface circuit 27 provides connections from these scan lines 45 to the input/output device 13 whereby the micro-processor 10 receives inputs corresponding to operation of the respective keys of the keyboard of the calculator. Thus operation of a key not only inputs data to the electronic arithmetic circuit of the calculator but also inputs the same data to the micro-processor 10. In addition, the interface circuit includes circuits 46 to enable data output from the micro-processor to be input to the keyboard of the calculator and thereby be displayed by the display device. Only one circuit is shown in the drawing but it will be appreciated that separate circuits 46 are provided for each key for which such input is desired. These circuits 46 consist of NPN transistors 47 connected by their emitters and collectors across the terminals of each key respectively. The bases of the transistors are driven by signals from assigned output lines of the input/output device 13 so that a signal driving the base of a selected one of the transistors turns that transistor ON, i.e. to a state in which the emitter collector path is low resistance, and thereby produces a low resistance between the contacts for that key such as would have occurred due to manual operation of that key.

If a calculator is utilised to provide keyboard and display functions, a memory 48 of the calculator may be utilised to maintain a short term record of the total value of stamps printed by the machine. For example to print a stamp of postal value 19p, the user enters '1' followed by '9' and then operates the M+ (memory) key. Thus the value 19 is entered into the calculator and entered in the calculator memory. Also the value 19 entered on the keyboard is input to the micro-processor 10 by means of the interface circuit. The micro-processor is thereby enabled to control a print routine to print a stamp with the postage value of 19p. The micro-processor is also programmed to add this value to

the contents of a register in the random access memory which maintains a cumulative total of postage values printed by the machine. If further stamps of the same postage value are required, the user operates the 'RM' (recall memory) key followed by the '+' key. Operation of the 'M+' or 'RM' keys may be utilised to initiate a print routine by the micro-processor. The micro-processor may also be programmed to maintain a count of the number of postage stamps printed, such count being stored in a register of the random access memory 12.

When it is desired to display data from the micro-processor and memories 12 and 13, operation of one or more designated keys of the keyboard may be utilised to initiate an appropriate program routine. The data is then output by the microprocessor to the designated output lines of the input/output device to turn on the transistors connected to the key contacts and thereby display the data on the display device.

Figure 3 illustrates the sequence of operations in a print routine in which print data is output to the print head and in which the speed of the motor is controlled. After initiation of a print routine, print data for the next line to be printed by the print head is set up from a table stored in one or more registers of the read only memory 11 by the micro-processor 10. The micro-processor outputs a control signal on line 18 to the motor drive circuit to cause the motor to be energised to provide a desired drive speed for the feed roller. The print data for the next line to be printed is output to the print head and the print head is energised by a print strobe signal to cause those elements, selected to be energised by the print data, to be energised to print a line of the required stamp impression on the paper tape. The micro-processor then samples the output from the sensor 19 to check whether the speed of rotation of the feed roller is correct. If the roller speed is correct and further lines of print are to be printed, the next line of print is set up and the print routine repeated as described hereinbefore. If all lines of print have been printed, the print routine is ended. If, when the micro-processor samples the output of sensor 19, the speed of the roller is not correct the micro-processor modifies the output to the motor drive circuit to adjust the power input to the motor such as to tend to bring the feed roller to the required speed prior to effecting printing of the next line of print. After the end of the print routine, the micro-processor 10 outputs a signal on line 30 to operate a paper cutter 31 to sever the printed stamp from the remainder of the paper tape.

The stamp printing machine may be powered by an internal DC supply powered from a mains supply or by means of an internal battery. In addi-

tion, the random access memory may be powered by a back-up battery in order to retain data, particularly that relating to accumulated postage value, in the event of switching off or failure of the internal battery or the mains power supply. If a calculator is used to provide keyboard and display functions, it may be powered in the conventional manner by its own separate internal battery but it is more convenient to power the calculator from the power supply for the remainder of the stamp machine.

The memory 12 would generally be non-volatile so that it will continue to retain the record of postage values printed after the stamp machine is switched off. For this purpose, a back-up battery would be provided to power the memory 12 when power to the stamp machine is switched off. Thus the memory 12 may be utilised to provide a long term record of usage of the machine. The memory 12 may store a rate chart to provide data relating to postage charges and data which is varied from time to time, for example due to changes in the postage charges set by the postal authority, may be changed by inputting new data via the keyboard or via an external connection to the stamp machine.

It will be appreciated that if a calculator is utilised to provide display and keyboard functions, the memory of the calculator will only retain data while the calculator is powered. Hence the calculator memory may be utilised to accumulate and store the cumulative postage values printed in a session of use of the machine, for example during use of the machine during one day. The memory may then be cleared at the end of the session, or will be cleared by switching off the stamp printing machine, and will be ready to accumulate and store the cumulative postage values printed in the next session of use.

The paper tape 37 on which the stamp is to be printed may be pre-printed with fixed postal data as shown in Figure 4(a) and postage data relating to the specific stamp is printed thereon by the stamp printer to produce a completed stamp 49 as shown in Figure 4(b). Alternatively the paper tape may be totally blank and the completed stamp 49 then carries only data printed on the paper tape by the stamp printer as shown for example in Figure 4(c). Preferably the stamps of either form include reference identity marks to enable the location of the stamp and/or selected printed data to be identified by machine reading facilities operated by a postal authority. Marks 31 identifying specific data carried by a printed stamp may be printed on the stamp by the print head as part of the print routine. Thus when a mail item bearing a printed stamp is passed through the machine reading device, detection of one mark identifies the start of the postage value and detection of the subsequent mark iden-

tifies the end of the value. Marks provided for a machine reading device to identify the location of the printed stamp and a value or code 41 thereon may comprise a stripe 32 printed with fluorescent ink. This stripe would be printed by a separate print head which may comprise a pre-impregnated pad moved into contact with the label. Conveniently, the pad may be secured to the paper cutter such that when the cutter is operated, the pad is brought into engagement with the stamp which has just been printed.

The data printed on the paper tape to form the stamp may additionally include advertising material such as shown at 33 in Figure 4(c). It is preferred that the paper tape 37 has a self adhesive back surface to facilitate adhering of the printed stamps to mail items. Accordingly, the paper tape is provided with an easily removable backing layer 43.

Instead of using a tape of heat sensitive paper and printing by the action of heat on the heat sensitive paper, printing may be effected utilising a thermal transfer ribbon for printing onto a tape of non-sensitive paper. However this would require the provision of a ribbon feed mechanism.

In use of the stamping machine, mail items bearing stamps printed by the machine can be taken to a postal authority and the total of postage due would be paid. Thus only those items for which postage is paid would be accepted and handled by the postal authority. To the user advantages over use of stamps sold by the postal authority include the ability to project a business image by the inclusion of advertising material in the printed impression, convenient preparation of mail items and flexibility of being able to print diverse postage values as required without the need to keep a stock of postage stamps of sufficient different values to enable the required diverse postage values to be made up. To the postal authority there would be the advantage of only requiring a single payment without the need to provide printed stamps.

The printer may be arranged to be able to print a statement label 50 after completion of a session of use of the machine in which a series of stamps have been printed and severed as shown in Figure 6. Such a label may include a listing of individual items with postage values together with a total of number of items and total postage value. Furthermore data on the printed stamps 49 and statement label 50 may be in machine readable form to enable mechanised reading of the stamps and/or statement label at a service counter. If the printed data includes identification of a user account it would be possible for unrestricted posting of mail items at any convenient entry point to the postal service. For this purpose the identification data and payment data would need to be provided in a

secure form to prevent fraud. In order to effect this security of data, the read only memory 11 would store an algorithm and a user would enter and store an account code in the memory 12. The user would enter a personal identifier (PIN) at the start of a stamp printing session and this would be used as an encryption key with the algorithm to code data including the account data and payment data for any set of mail items stamped in a session. An authorisation for payment together with the statement label and set of mail items bearing stamps printed by the stamp machine would be placed in a special service identified envelope and posted as a single entity. The receiving office of the postal authority would then remove the items from the envelope and verify the correctness of the charging data by machine reading the stamps and statement label and then use the machine read charge data to carry out accounting functions to debit the users account and to update the account records of the postal authority. The random access memory, or part thereof powered by back-up battery may be utilised to store the account code and if desired it may store a table of postage values related to type of service and weight of mail item. The program for the micro-processor 10 would then include a routine to calculate postage rates from an input on the keyboard of the mail item weight and the service required, e.g. first or second class inland or surface or airmail overseas postage.

The stamp printing machine may be arranged to accommodate differing requirements by different postal authorities with regard to the format of the printed stamp or statement label. Thus fixed printing data may be loaded at a service point and stored in a part of the random access memory powered by back-up battery.

The mechanical arrangement of components of the stamp printing machine is shown in Figure 5 in a housing 35. The thermal print head 15 is located between a pair of feed rollers 34 on a common drive shaft 21, the disc of the sensor 19 also being mounted on this shaft. The pressure roller 36 extends across the width of the print head and across the pair of feed rollers and is resilient or resiliently mounted to press against print thermal elements, indicated by reference 51, of the print head and against the pair of feed rollers 34. The feed rollers are driven by an electric motor (not shown) to draw a paper tape 37 paper tape from a roll 38 of tape and to feed the tape past and in contact with the print head elements to an exit slot 39 in the housing. Between the print head and the exit slot there is located a cutter 31 which may be operated, manually or by an output from the micro-processor as hereinbefore described, to sever the printed stamp from the web of paper tape. A pad 40 pre-impregnated with fluorescent or phosphorescent

ink is mounted adjacent the cutter 31 and operable by operation of the cutter to print the fluorescent or phosphorescent stripe 32 across the end of the printed stamp. Thus the label separating means and the stripe printing means are integrated with one another and ensure correct positioning of the stripe relative to the stamp. However, if desired, the paper tape may be provided with the stripe 32 pre-printed on the tape and the stamp printer would then be provided with a sensor 52 connected to the microprocessor 10 via the input/output circuit 13 to detect the stripe and thereby enable the printing of the stamp to be correctly positioned relative to the stripe.

While the stamp printer has been described hereinbefore in relation to printing of postage stamps for use in a mail system operated by a postal authority, the stamp printer may be utilised in connection with services provided by a number of carriers by the provision of different print formats for stamps and statement labels and different registers in the memory.

It will be appreciated that the stamp printer described hereinbefore prints an impression which can be accepted by postal authorities as a preform to payment for the provision of the postal service. The payment is derived from the data printed on the stamp label and accordingly the stamp printer does not require to be provided with security for its registers and printing as with a franking machine in which payment is based upon data held securely in its registers. The stamp printer is able to provide not only a printed stamp for application to a mail item but, using the same print head and label material, it can also provide a printed statement label. Coding may be provided on the printed statement label which would facilitate entry of mail items to the postal service and facilitate correct payment from a customer account with adequate security. The coding would be a function of a user identifier and the total postage amount to be charged. Printing may be controlled by entry of a user code.

Claims

1. A postage stamp printing machine characterised by electronic control means (10); means (11) to store data relating to fixed information to be printed; means (26) to input selected variable postage rate data to the control means (10); printing means (15) operable by said control means (10) to effect a printing routine in which the fixed information and the selected variable postage rate information is printed; feed means (34,36) to feed a mail item (37) past the printing means (15) to cause printing of a postage stamp (49) on the mail item

(37); means (18,10) to control the speed at which said mail item is fed to a substantially constant speed.

2. A postage stamp printing machine as claimed in claim 1 further characterised by the provision of a calculator module (29); said calculator module (29) including a keyboard (26), a data display device (28) and electronic control and calculating means (44) operable to scan keys of the keyboard (26) to detect operation thereof to input data corresponding to an operated key and to output said data to the display device (28); and interface circuits (27) operative in response to scanning of said keys to input data corresponding to an operated key to the electronic control means (10).

3. A postage stamp printing machine as claimed in claim 2 further characterised in that the interface circuits (27) include switch means connected across contacts of said keys and operable by output signals from the control means to cause data to be displayed by the display device.

4. A postage stamp printing machine as claimed in claim 1 2 or 3 further characterised by the provision of severing means (31) operable to sever a printed stamp (49) from a paper tape (37).

5. A postage stamp printing machine as claimed in any preceding claim further characterised in that the printing means (15) includes a thermal print head (15) comprising a line of selectively energisable printing elements (51) which are heated by energisation thereof to print upon a tape (37) of thermally sensitive paper.

6. A postage stamp printing machine as claimed in any preceding claim further characterised by the provision of means (40) to print a stripe (32) of fluorescent or phosphorescent ink on the mail item.

7. A postage stamp printing machine as claimed in claim 4 further characterised by the provision of means (40) operable in response to operation of the severing means (31) to print a stripe (32) of fluorescent or phosphorescent ink on the mail item (37).

8. A postage stamp printing machine as claimed in claim 6 or 7 further characterised in that the means (40) to print a stripe (32) comprises a pad (40) pre-impregnated with fluorescent ink.

9. A postage stamp printing machine as claimed in any preceding claim further characterised in that the printer (15) is operated by the electronic control means (10) controlled by a program routine to print at least one mark (31) identifying selected data printed on the stamp (49).

10. A postage stamp printing machine as claimed in any preceding claim further characterised in that the printer (15) is operated by the electronic means (10) controlled by a program rou-

line to print a statement label carrying data relating to a preceding printing of one or more postage stamps.

11. A postage stamp printing machine as claimed in claim 10 further characterised in that the postage stamps (45) are printed along the length of a paper tape and thereafter the statement label (50) is also printed on paper tape (37).

12. A postage stamp printing machine as claimed in claim 10 or 11 further characterised by the provision of means (10) to receive an encryption key input by a user and to utilise the encryption key to encode data printed on the statement label (50).

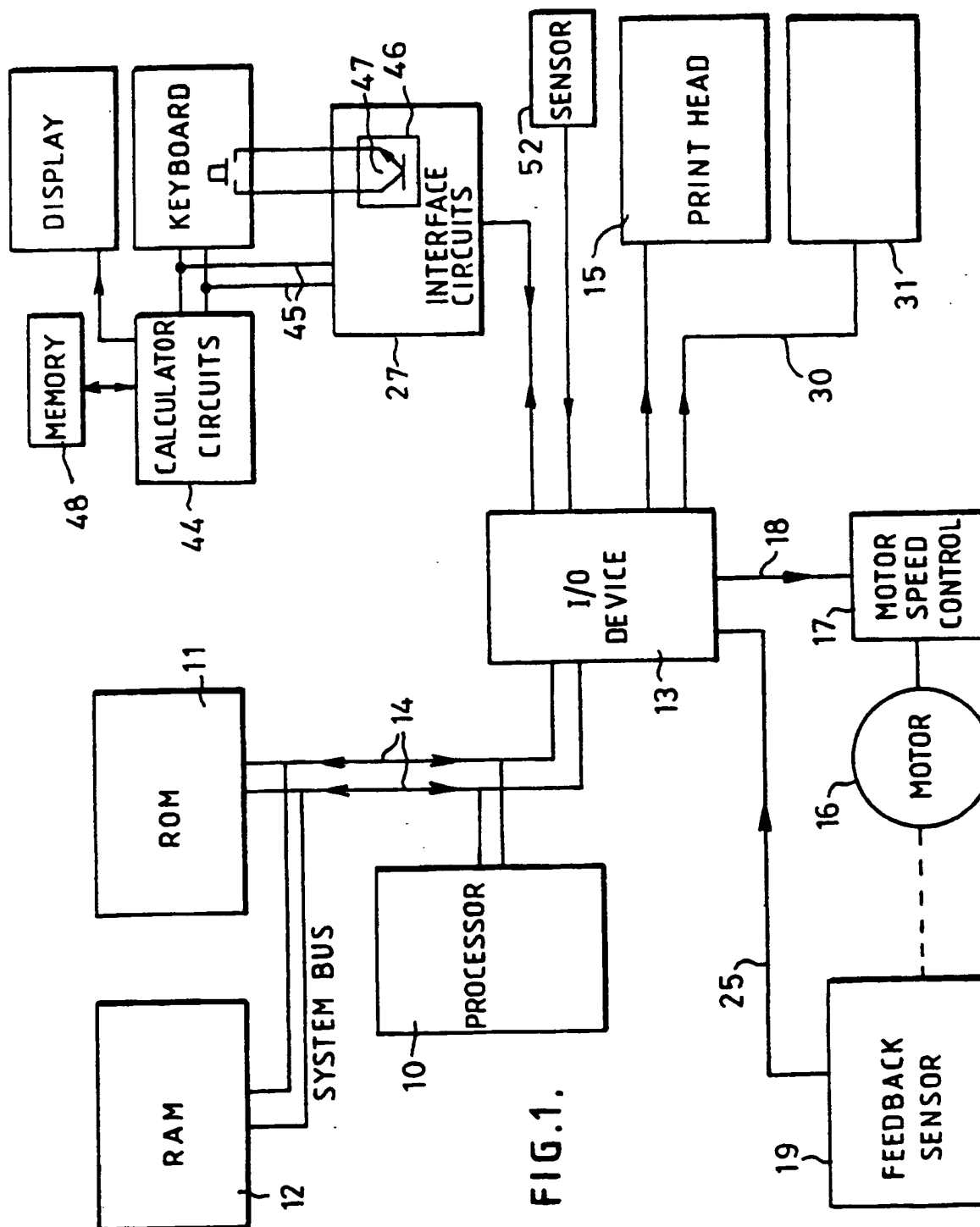
13. A postage stamp printing machine as claimed in any preceding claim further characterised by the provision of means (10) to receive an encryption key input by a user and to utilise the encryption key to encode data printed in the postage stamp (49).

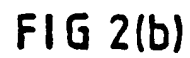
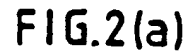
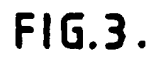
14. A postage stamp machine as claimed in any preceding claim further characterised by the provision of means (12) to store postage charge rate data.

15. A method of printing postage stamps and accounting for value of stamps printed characterised by the steps of utilising a non-secure printer (15) to print a series of postage stamps (49), each printed postage stamp (49) including an indication of postage charge for the respective postage stamp; and utilising reading means to read each of the series of postage stamps (49) and to generate an accumulated total postal charge for the series of postage stamps.

16. A method as claimed in claim 15 further characterised in that the postage stamps (49) are printed one after the other along the length of a paper tape (37) and including the steps of generating an accumulated value of postage charge represented by the series of postage stamps printed and utilising the printer (15) to print a statement label (50) indicating the accumulated value of postage charge for the series of postage stamps printed.

17. A method as claimed in claim 16 further characterised by the step of encoding the accumulated value and then printing the encoded accumulated value on the label.





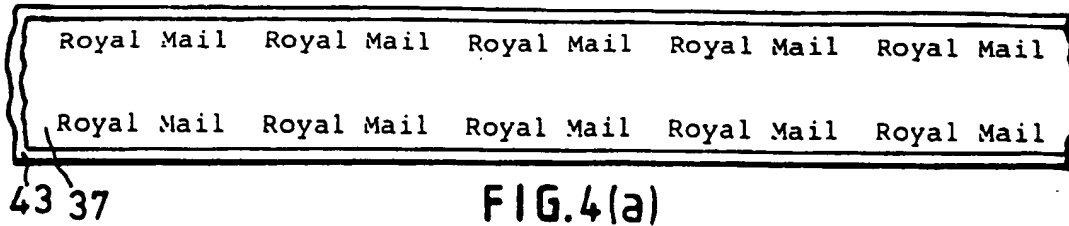


FIG. 4(a)

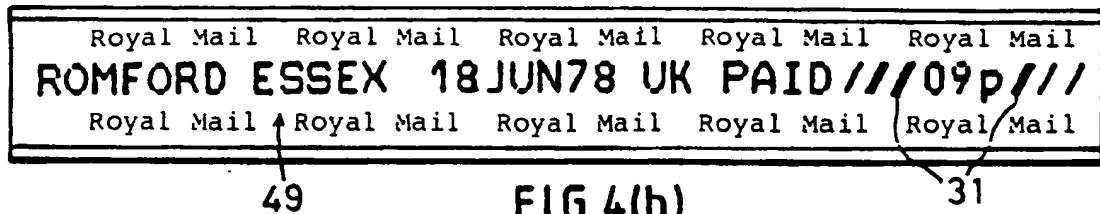


FIG. 4(b)

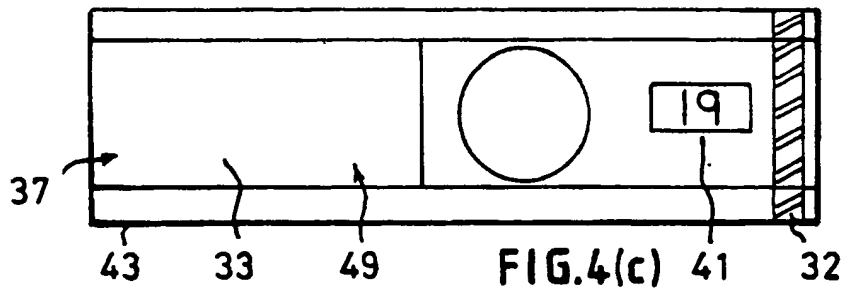


FIG. 4(c)

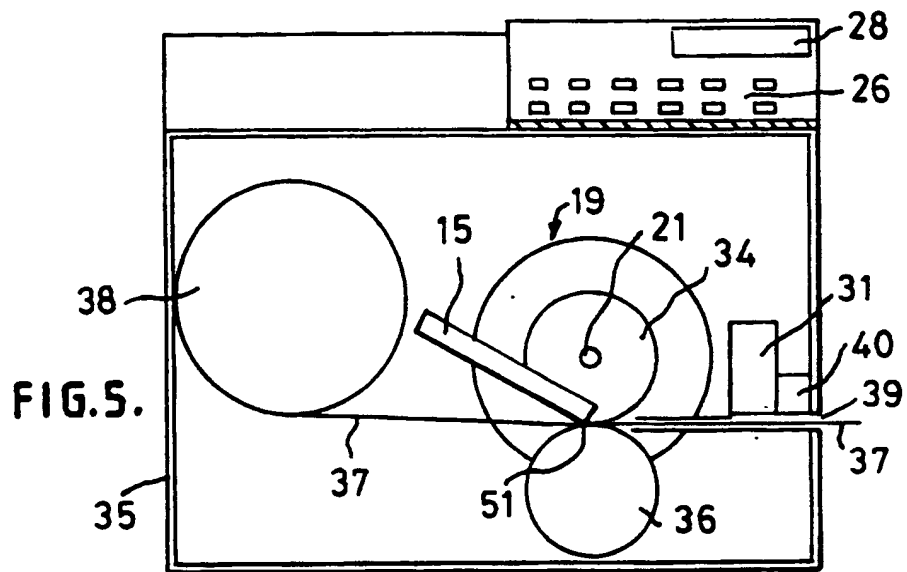


FIG. 5.

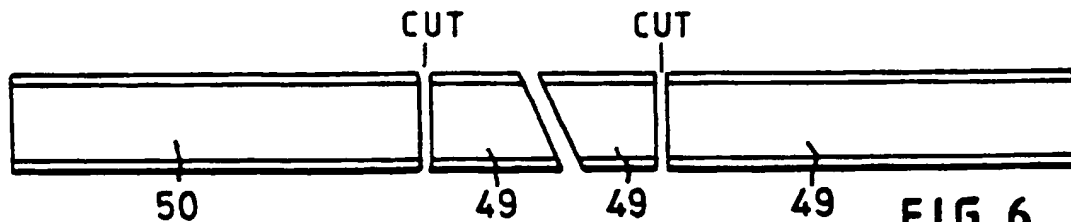


FIG. 6.

1. The first step is to identify the problem or question that needs to be addressed. This involves understanding the context and the specific requirements of the task.

2. Next, it is important to gather relevant information and data. This can be done through research, consultation with experts, or by analyzing existing resources.

3. Once the information is gathered, the next step is to develop a plan or strategy. This involves breaking down the problem into smaller, manageable parts and determining the best approach to solve each part.

4. After the plan is developed, the next step is to implement the solution. This involves putting the plan into action and monitoring the progress to ensure that the solution is effective.

5. Finally, it is important to evaluate the results of the solution. This involves comparing the actual outcomes with the expected outcomes and identifying any areas for improvement.

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